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#11 Appeal Brief (3) 1/16/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-1282)

In the Application of:	
Jourdier et al.	**Examiner: Bao Q. Li**
Serial No.: 09/720,513	**Group Art Unit: 1648**
Filing Date: March 26, 2001	**Confirmation No.: 3546**
For: Mucosal Targeting Immunisation	

APPEAL BRIEF

Commissioner for Patents
Washington, D.C. 20231

Real Party in Interest

The real party in interest is Aventis Pasteur.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 10-15 are pending and are under final rejection. A copy of these claims is attached hereto in the Appendix.

Status of Amendments

No amendments were filed after final rejection.

Summary of the Invention

The mucous membrane is the main route for the transmission of the AIDS virus and many other pathogenic agents. Once it has entered the mucous membrane, a pathogen with this route of infection rapidly spreads to the draining lymph nodes, from which it joins the peripheral blood.

Thus, the induction of immunity in the mucous membrane appears as an important method of prophylaxis and immunotherapy directed against these pathogens. This type of immunity blocks a

pathogen in the membrane itself or in the first stages of spreading in the lymph nodes, effectively stopping the infection at its inception (page 1, lines 12 – 25 of specification).

However, as reported from page 1, line 27 to page 2, line 39 of the specification there currently exists no method of mucosal membrane immunization method targeted at the rectogenitourinary region proven to be truly effective and viable in the current practice of human or veterinary medicine. Furthermore, there was nothing to allow it to be supposed that an injection at sites distant from the mucous membrane could bring about a targeted local response.

The present invention provides a method for inducing the development of a local response, in particular in the rectourogenitary mucous membrane and the lymph nodes which drain it, by parenteral injection of an immunogenic composition in a part of the body distinct from the mucous membrane, such as the thigh (page 4, lines 3-24 of the specification). The induced local response includes the production of IgA, IgG or IgM antibodies and of B cells secreting said antibodies in said membrane and lymph nodes (page 5, lines 13 to 24 of the specification). Systemic response can also be induced (page 5, line 34 to page 6, line 5 of the specification).

In particular, the present invention is effective against pathogenic agents having a gateway in the rectourgenitary mucous membrane (page 4, lines 34-37 of the specification). Preferred target pathogens include the HIV virus, Herpes viruses, Candida, Chlamydia, human papilomavirus, genital mycoplasma, Treponema pallidum, papovaviruses and gonococcal infections (page 5, lines 26-32 of the specification).

Issues

1. Whether claims 10-15 are indefinite under 35 U.S.C. § 112, second paragraph:
   a) for failing to identify the immunogens and/or pathogens; and
   b) for omitting essential elements.

2. Whether claims 10-15 are unpatentable under 35 U.S.C. § 112, first paragraph, for failing to enable the claimed method for any and all immunogens.

3. Whether claims 10-15 are anticipated under 35 U.S.C. § 102 by Morrow et al. (US Patent No. 6, 063,384A), claims 10-14 are anticipated by Whittle et al. (US Patent No. 6,123,948A) claims 10-15 are anticipated by Krieg et al. (US Patent No. 6,339,068B1), claims 10-15 are anticipated by Cohen et al. (US Patent No. 5,654,174A, August 5, 1997) and claims 10-15 are anticipated by Carrano et al. (WO 95/26718A1).

4. Whether claims 10-15 are obvious under 35 U.S.C. § 103 over McBride et al. (Vaccine 1988, Vol. 6, pp. 414-418) and Lehner et al. (J. Immunol. 1994, vol. 15, pp. 1858-1868).

Grouping of the Claims

Claims 10-15 stand or fall together.

Argument

1. Claims 10-15 are not indefinite

a. *The claims are clear and need not recite particular immunogens or pathogens in order for one skilled in the art to understand the metes and bounds of the claims*

Claim 10 (and the claims that depend from it) was rejected as indefinite as to the metes and bound of the claim in view of the use of the term "immunogen" and "pathogen[ic] agent." The rejection was imposed "because there are so many immunogen[s] and pathogen[s] in the art, the claim should point out which immunogen and pathogen are intended." For the following reason, the applicants respectfully request that the rejection be reversed.

There has been no allegation that the claims are unclear. Rather the rejection for indefiniteness is based merely on the breadth of the claims. However, the breadth of a claim alone is not a basis for rejecting the claim as indefinite. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). "If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph." MPEP § 2173.04. The applicants submit that the scope of the claims is clear (and the Office Action has not alleged that it is not). Accordingly, the applicants respectfully request reconsideration and withdrawal of this rejection.

b. *Claims 10-15 are not indefinite for omitting essential elements because no essential elements are omitted*

Claims 10-15 stand rejected under § 112, second paragraph, as being "incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01." The "omitted elements" were alleged to be the "kind of immunogen used, the kind of human systemic response, the concentration of immunogen in the composition, *etc.*" For the following reasons, the applicants respectfully request reversal of this rejection.

The applicants submit that if certain elements are missing, it is incumbent on the Patent Office to specifically delineate either the missing elements or the gaps. By concluding the listing of missing elements with "*etc.*," the Patent Office leaves the applicants to speculate as to what other gaps the Patent Office may consider to be present in the claims and, consequently, the applicants are unable to craft an appropriate response.

The section of the MPEP referred to by the Office Action states, "a claim which fails to interrelate essential elements of the invention as defined by applicant(s) in the specification may be rejected under 35 U.S.C. 112, second paragraph, for failure to point out and distinctly claim the invention." The Office Action has failed to explain how the claims fail to interrelate essential elements or why or how the three "omitted elements" are essential elements or connect essential elements. The applicants respectfully submit that the three "omitted elements" recited by in the Office Action are not essential elements. Nor do the claims fail to interrelate essential elements. The Office Actions fails to indicate which essential elements are not properly interrelated.

The Office fails to explain how the "omitted elements" leave a gap in the claims.

i. The claims do not contain a gap by not reciting a particular kind of immunogen. There are no elements in the claims that require connection by recitation of a particular kind of immunogen, and the Office Actions have identified none. Recitation of "immunogen" is sufficient to connect administration and the elicitation of a response.

ii. There are no claim elements that require connection by a "kind" of systemic response, and the Office Actions have identified none. Recitation of "systemic response" clearly identifies the results of administering an immunogen.

iii. There is no gap in the claims that would be filled by recitation of a concentration (*i.e.*, an immunogen concentration would not connect to essential elements) and the Office Action has identified none.

The Office appears to be troubled that the claims do not recite a particular antigen. But not reciting a particular antigen does not make the claims indefinite. Rather than recite a particular antigen, the claims recite the genus of "immunogens," as is appropriate because the applicants have discovered a method that is applicable to the genus of immunogens recited in the claims and not limited to any particular antigen or antigens. The Office Action has failed to explain how reciting a particular antigen as opposed to a genus of antigens would make the claims any clearer to one of ordinary skill in the art.

In view of the foregoing, the applicants respectfully request reversal of this § 112, second paragraph, rejection.

2. Claims 10-15 do not lack enablement for the full scope

Claims 10-15 were rejected under 35 U.S.C. § 112, first paragraph, as lacking enablement for the full recited scope. The Office Action alleges that "[the specification] does not reasonably provide enablement for inducing [...] immune response in human by injecting any or all immunogen for any or all pathogen agents as listed in claim 14." For the following reasons, the applicants respectfully request reversal of this rejection.

The final Office Action emphasized that the rejection was limited to the scope of immunogens of the pathogenic agents listed in claim 14 because in response to the applicants' argument that the claims are limited to "immunogen[s] of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes," the final Office Action stated, "The office action has not alleged that this scope has not been enabled." (Emphasis added.) Thus, the Office acknowledges that the claims are enabled for the full scope of "immunogen[s] of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes."

The applicants note, however, that all the claims, **including claim 14** (which depends from claim 10), are limited to immunogens of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes." That is, the pathogenic agents recited in claim 14 have a

gateway into the rectal, genital, and/or urinary mucous membranes. It appears that the Office may have misapprehended this fact, overlooking the dependence of claim 14 from claim 10. Since the Office considered the claims enabled for the full scope of immunogens from pathogenic agents having a gateway into the rectal, genital, and/or urinary mucous membranes (as stated in the final Office Action), the claims must be enabled for the pathogens of claim 14 as well.

The Office Actions cited two scientific journal articles in support of the non-enablement rejection. While the foregoing renders the argument vis-à-vis the cited articles moot, the applicants nevertheless provide the following comments.

The Office Actions cited the following in support of its non-enablement rejection:

a) Harman *et al.* (*Infect. Immun.* **62**, 412 (1994)) for teaching that intramuscular injection of O-antigen-protein did not protect naïve animals against subsequent challenge; and
b) Oien *et al.* (*Vaccine* **12**, 731 (1994)) for teaching that and RSV chimeric FG glycoprotein does not induce local IgA or IgG antibody production by parental administration.

The applicants respectfully submit that the results disclosed in these publications are not indicative of the results one would achieve with the presently claimed method. Harman *et al.* teach vaccination of **non-primate** guinea pigs via **mucosal** and **intraperitoneal** administration. Harman *et al.* does not teach administration of an immunogen of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes into the thigh of a human or even a non-human primate. Furthermore, Harman *et al.* deals with *Shigella*, which invades the human colonic epithelium. The colon ends at the rectum and, correspondingly, *Shigella* immunogens do not have a pathway into the rectal, genital and/or urinary mucous membranes. Because of these substantial differences, the Harman *et al.* study is simply not indicative of the results of the presently claimed method.

Oien *et al.* teaches vaccination of **non-primate** mice via **intranasal** administration with respiratory syncytial virus (RSV). Oien *et al.* does not teach administration of an immunogen of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes into the thigh of a human or even a non-human primate. Furthermore, Oien *et al.* teaches **respiratory** syncytial virus, which does not have a pathway into the rectal, genital, or urinary mucous membranes. Because of

these substantial differences, the Oien *et al.* study is simply not indicative of the results of the presently claimed method.

The Office stated that despite the distinctions noted above, the references were relevant because the teach that "although the immunogen does not have the gateway into the rectal, genital and/or urinary mucous, they teach that it is unpredictable for regional injection of an immunogen although nearby its original infection route, is may not able to induce the regional or systematic immune response". However, the Office has failed to provide any evidence or reasoning establishing that the results of Harman *et al.* and Oien *et al.* have any relevance beyond the particular pathogens and routes of administration disclosed therein. The applicants respectfully submit disclosures of Harman *et al.* and Oien *et al.* have no relevance to the presently claimed method.

In view of the foregoing, applicants respectfully request reversal of this § 112 rejection.

3. Claims 10-15 are not anticipated under 35 U.S.C. § 102 by cited art

Claims 10-14 were rejected as anticipated under § 102(e) by Morrow *et al.* (6,063,384), claims 10-15 were rejected as anticipated under § 102(e) by Whittle *et al.* (6,123,948) and Krieg *et al.* (6,339,068), claims 10-15 were rejected as anticipated under § 102(a) by Cohen *et al.* (5,654,174), and claims 10-15 were rejected as anticipated under § 102(b) by Carrano *et al.* (WO 95/26718). The basis for all rejections was that each patent publication disclosed intramuscular administration of an immunogen. The Office Action alleged that because the thigh (as recited in the present claims) is a muscle, each of the cited patent publications anticipated the present claims. For the following reasons, the applicants respectfully request reversal of these rejections.

The Office Action had failed to establish a *prima facie* case of anticipation because it merely alleged that the genus of the prior art (*i.e.*, intramuscular administration) anticipated the presently claimed species (administration into the human thigh). To anticipate, the prior art must disclose each and every limitation of a claim. Furthermore, it is well settled that a genus does not inherently anticipate a species. *E.g., Corning Glass Works v. Sumitomo Electric U.S.A. Inc.*, 9 USPQ2d 1962 (Fed. Cir. 1989). There are 630 muscles in the human body, yet none of the cited art has even been alleged to disclose the thigh as being the locus for vaccine administration. Furthermore, as noted on page 2, ll. 16-23, of the specification, Letchworth *et al.* taught that an intramuscular injection in an

unspecified location of a glycoprotein induced a systemic response only. Accordingly, the locus of administration is important. Absent a teaching of the thigh as the site of administration, the cited art simply cannot anticipate, as it does not disclose each and every limitation of the claims.

In view of the foregoing, the applicants respectfully request reconsideration and withdrawal of these § 102 rejections.

4. Claims 10-15 are not obvious over the cited art

Claims 10-15 were rejected as obvious over McBride *et al.* (Vaccine 1988, Vol. 6, pp. 414-418) and Lehner *et al.* (J. Immunol. 1994, vol. 15, pp. 1858-1868). McBride *et al.* teaches immunization of guinea-pigs against HSV. McBride *et al.* injected vaccine subcutaneously between the scapulae and observed secondary responses both in the serum and at the vaginal mucosa of subsequently challenged guinea-pigs. Lehner *et al.* teaches subcutaneous immunization of non-human primates in the internal iliac lymph nodes to target the genitourinary -rectal associated lymphoid tissue and observed secretory IgA and IgG antibodies at the mucosal surfaces. The Office Action concluded that it would have been obvious to immunize a human subject by injection in the vicinity of the internal iliac lymph nodes, which the Office Action presumably envisions as including the thigh. For the following reasons, the applicants respectfully request reversal of this rejection.

Neither McBride *et al.* nor Lehner *et al.* teach or suggest administration to the human thigh to induce a local response in the rectal, genital, and/or urinary mucosal tissues, and the Office Actions have not alleged that they do. These references do not mention the thigh (human or otherwise) at all and so do not and cannot suggest parenteral administration to the thigh. And the Office Actions fail to explain how they do.

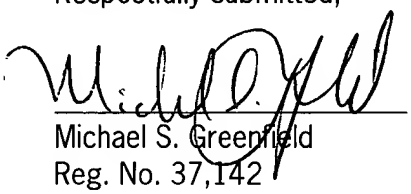
Nor do these references provide any teachings that would imbue the ordinary artisan with a reasonable expectation of success. McBride *et al.* is solely focused on inter-scapulae administration in guinea-pigs, which has essentially no predictive value with respect to the likelihood of success of administration of an immunogen of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes to a human thigh.

Lehner *et al.* teaches deep injection to the internal iliac lymph nodes of macaques but provides no teachings from which the ordinary artisan could derive a reasonable expectation that administration

to *other than* the internal iliac lymph nodes and, in particular, to the thigh, would have the effect of inducing a local immune response in the rectal, genital, and/or urinary mucosal tissues. The Office Actions have merely presumed that administration "near" the internal iliac lymph nodes is sufficient teaching to render obvious the presently claimed invention. But the Office Actions have failed to provide any scientific support for such a presumption.

In view of the fact that cited art fails to teach or suggest administration to the thigh or to provide any teachings that would imbue the ordinary artisan with a reasonable expectation of success, the presently claimed invention cannot be obvious. Therefore, reversal of this § 103 rejection is respectfully requested.

Respectfully submitted,

Date: December 20, 2002 By: 

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APPENDIX

CLAIMS FOR APPLICATION SERIAL NO.09/594,075

10. A method of inducing in a human a systemic immune response and a local immune response of IgA, IgG or IgM antibodies or B cells secreting said antibodies, the method comprising parenterally administering to a human subject's thigh a composition comprising an immunogen of a pathogenic agent having a gateway into the rectal, genital and/or urinary mucous membranes in an amount effective to elicit said immune response.

11. The method according to claim 10, wherein the administering to the thigh is intramuscular.

12. The method according to claim 11, wherein the intramuscular administering is in the quadriceps.

13. The method according to claim 12, wherein the administering is in the right anterior muscle of the quadriceps.

14. The method according to claim 10, wherein the immunogen is from a pathogen selected from the group consisting of HIV, Herpes viruses, Candida species, chlamydia species, human papillomavirus, genital mycoplasmas, Treponema pallidum, and gonococcal infections.

15. The method according to claim 14, wherein the Herpes virus is Herpes simplex virus.